Attachment 1. TRC grant #203R1 September 1, 1959-April 30, 1960

PROGRESS NOTE

Dr. C. B. Thomas

TOBACCO INDUSTRY RESEARCH COMMITTEE GRANT Report No. 2

I. PUBLICATIONS

A. Supported in part by TIRC grants.

1. Thomas, C.B. and Others: The Precursors of Essential Hypertension and Coronary Artery Disease: Collected Papers. Vol. I, 1948-1959.

2. Thomas, C.B. and Cohen, B.H.: Comparison of Smokers and Nonsmokers: I. A Preliminary Report on the Ability to Taste Phenylthiourea (P.T.C.). Bull. Johns Hopkins Hosp. 106:205, 1960.

3. Thomas, C.B.: Characteristics of Smokers Compared with Nonsmokers in a Population of Healthy Young Adults, including Observations on Family History, Blood Pressure, Heart Rate, Body Weight, Cholesterol and Certain Psychologic Traits. To be published in the Ann. of Int. Med.

4. Thomas, C.B. and Murphy, E.A.: Circulatory Responses to Smoking in Healthy Young Men. To be published by the New York Academy of Sciences in a monograph.

5. Thomas, C.B. and Murphy, E.A.: The Circulatory Response to Smoking: The Effect of Small Doses of Hexamethonium and of Mephentermine on the Pattern of Response. Submitted for publication.

B. Other.

1. Thomas, C.B. and Garn, S.M.: Degree of Obesity and Serum Cholesterol Level. Science, 131:42, 1960.

C. Ready for publication before Sept. 1, 1960.

1. Cohen, B.H. and Thomas, C.B.: Comparison of Smokers and Nonsmokers: II. ABO and Rh Blood Groups, with Further Observations on the Ability to Taste P.T.C.

2. Jones, L.W. and Thomas, C.B.: Studies on Figure Drawings: A Review of the Literature (1948-1959).

II. STUDIES IN PROGRESS

A. Genetic Differences between Smokers and Nonsmokers.

The following information was collected on 1620 healthy donors at the Johns Hopkins Hospital Blood Bank between October 14, 1958 and October 30, 1959:

1. Smoking habits of donors
2. Ability to taste P.T.C. (phenylthiourea, phenylthiocarbamide)
3. ABO and Rh blood groups
4. Cholesterol level

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5. Smoking habits of parents
6. Medical history of parents as to high blood pressure, stroke, heart attack, other heart disease, cancer of lung and other cancer
7. Cause of death of parents

The collection period was terminated after 1009 white male donors had been registered. Dr. B.H. Cohen and the Director are now analyzing and publishing the results in a series of papers entitled "Comparison of Smokers and Nonsmokers." The first paper, subtitled "I. A Preliminary Report on the Ability to Taste Phenylthiourea (P.T.C.)" appeared in the Bull. Johns Hopkins Hosp. 106:205, Apr., 1960 (attachment 3). The second paper, subtitled, "II. ABO and Rh Blood Groups, with Further Observations on the Ability to Taste P.T.C." is partially complete (attachment 6). Two more papers are contemplated, one dealing with the cholesterol levels of smokers vs. nonsmokers, the other with the smoking habits, causes of disability and of death of the parents of smokers vs. nonsmokers.

B. Psychological Differences between Smokers and Nonsmokers as Shown by Comparison of Figure Drawings: Draw-A-Person Test.

In the long-term "Precursors of Hypertension and Coronary Heart Disease" study on Johns Hopkins medical students, we have collected a vast amount of psychological data for correlation with genetic, physiologic and metabolic studies. The data include:

1. Questionnaires concerned with a detailed habit survey, interfamily attitudes and relationships and other personal data on over 1000 subjects (classes of 1948-1963).
2. Rorschach Tests on over 1000 subjects (classes of 1948-1963).
3. Figure Drawings (Draw-A-Person-Test) on 787 subjects (classes of 1952-1963).
4. Strong Vocational Interest Tests on 391 subjects (classes of 1958-1963).

Since the smoking habits of our subjects have been obtained on all classes, we have a unique opportunity of studying the personality characteristics of smokers compared with nonsmokers as they are revealed by projective and non-projective testing as well as by questionnaire.

Using interview and questionnaire methods, Heath and Lilienfeld have reported a variety of psychological differences between smokers and nonsmokers (1,2). In a preliminary analysis of the findings on our "habits of nervous

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tension" questionnaire, the occurrence of anger and urge to eat under stress was significantly greater among smokers than nonsmokers. (attachment 4). Nonsmokers more frequently reported decreased activity under stress than did smokers. However, when the Rorschach responses of smokers and nonsmokers were compared, no significant differences between the groups were found in respect to productivity, constriction, proportion of whole, detailed and very detailed responses or distribution of color responses. The only significant difference thus far identified was that nonsmokers more often gave a high number of white space responses than smokers. Many variables in the Rorschach test have not yet been examined.

Since September, 1958, we have studied the figure drawing material from several points of view. First, two pilot studies were carried out:

1. With the collaboration of Dr. Irvin Greenberg, clinical psychologist, almost 20 characteristics of the figure drawings of heavy cigarette smokers and nonsmokers were compared in a blind study. After excluding women and the foreign born, four groups of figure drawings were randomly selected, two consisting of the drawings of 24 heavy cigarette smokers each and two of the drawings of 24 nonsmokers each. The psychologist was given two unidentified sets of drawings; he was told that each set was homogeneous in regard to the subject's smoking habits, but was not told which group smoked. The variables studied in this fashion included:

a. Figure drawn first - man or woman
b. Figure size; difference in size of male and female figure
c. Position of figures
d. Head and body concordant or discordant
e. Differences in general position and arm position of male vs. female figures
f. Body parts missing; hands hidden, hands missing, ears missing
g. Presence or absence of movement
h. Figures nude or clothed
i. Presence or absence of extensions (knife, hat, gun, etc.)
j. Figure smoking or not smoking
k. Amount of detail in drawing
l. Presence or absence of buttons, pockets, neckties, belts
m. Amount of hair - much, medium, little or none
n. Mouth emphasis
o. Mouth open or closed
p. Mouth shape
q. Breast emphasis
r. Quality of lines: light vs. dark; sharp vs. shaded or broken
s. "Global" characterization of drawings: primitive, childish, medium, adult or idiosyncratic

If differences were found between the first two groups, he examined the second two unidentified sets of drawings to see if the same differences were again found. In several instances significant differences were found in comparing the first sets or the second sets, but consistent significant differences were not found in both sets. Although there were some suggestive findings, publication of these results was postponed until further studies could be carried out.

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2. As part of the "Precursors" study, Dr. E.W. Slockbower, clinical psychologist, has written interpretations of the figure drawings of 787 students without knowledge of their smoking habits. The interpretations were examined blind by two nonpsychologists for differences in the reported frequency of selected personality characteristics. The interpretations for 96 heavy cigarette smokers and 96 nonsmokers were randomly selected and the groups of 96 were divided into four subgroups of 24 subjects each. The characteristics and their frequencies are given in Table A. (attachment 7). It will be seen that smokers more often showed obsessive-compulsive trends, feelings of inadequacy, impulsiveness, oversensitiveness, heterosexual and homosexual problems and immaturity, while nonsmokers exhibited shyness, passivity and identification problems. There was great similarity between smokers and nonsmokers in regard to the frequency of aggressiveness, orality, fear of castration and masturbatory guilt. Before making tests for statistical significance, however, it seems wise to further sharpen our definitions of terms and reproducibility of scoring. Publication is therefore temporarily postponed.

Next, a preliminary classification of figure drawings was made and scoring of 787 sets of figure drawings suitable for IBM analysis was undertaken by two nonpsychologists. It was found that whereas scoring was highly reproducible between observers for some items (e.g. sex of figure drawn first; figure nude or clothed) it was less reproducible in respect to other items (e.g. breast emphasis) and difficult to reproduce in regard to such items as quality of line or "global" impression.

At this point two things became clear: we needed an expert in psychological testing and statistics to collaborate with us, and it was important to review the literature on figure drawings to determine how others had handled the problems of validity and reliability.

We were most fortunate in being able to add Dr. Leona Wise Jones to our staff on a part-time basis on Dec. 1, 1959. As one who has taught in the field of psychological testing (see biographical note under 8. Facilities and Staff Available) she brings the needed critical judgment to our project. The Draw-A-Person Test has been in use as a clinical tool for a little over 10 years. Dr. Jones studied practically all of the papers pertaining to that test, and found that there is no comprehensive review of the literature; Swenson's "Empirical Evaluation of Human Figure Drawings" is the nearest thing to it, but the approach of that excellent paper was somewhat different from the one we are interested in (5). Accordingly, Dr. Jones has completed a 53 page first draft

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of a paper entitled "Studies on Figure Drawings: A Review of the Literature (1948-1959)" and is now revising it. The outline of the paper is as follows:

I. Introduction
II. Concept
III. Aspects of Research
  A. Differentiation
  B. Methodology
    1. Judges
    2. Scoring Scales
    3. Procedures
  C. Validity and Reliability
  D. Interpretations

We are beginning to refine our own methods of classification, particularly in respect to reliability of scoring. In doing this, we shall make use of information derived from a number of sources. In particular, we are using Swenson's scale for rating sexual differentiation on the Draw-A-Person Test (4,5). Two projected papers based on our figure drawing material are:

I. The Draw-A-Person Test: Comparison of Smokers and Nonsmokers in a Population of Medical Students, with Especial Reference to Sexual Differentiation and Identification.
II. The Relationship of Body Type to Self-Image as Revealed by Figure Drawings.

These studies should prove of particular interest in the light of Seltzer's recent work on constitutional types (6). He found statistically significant differences in the strength of the masculine component among groups of men with different smoking habits. Weakness of the masculine component was significantly more frequent in smokers than nonsmokers, and most frequent among heavier smokers. Dr. Seltzer now has an independent TIRC grant to carry out similar studies on the Johns Hopkins medical students, who are also our subjects. He will use portions of our data, particularly concerning smoking habits, and in return will add his data to ours. This circumstance gives us special incentive to explore the psychological sex orientation of the students for purposes of seeking interdisciplinary correlations with his constitutional findings.

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